



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,840	10/25/2001	Carminc J. Vetrano	SAET-001CP2 61966-017	6495

7590

05/20/2004

David M. Mello
McDERMOTT, WILL & EMERY
28 State Street
Boston, MA 02109

EXAMINER

JEFFERY, JOHN A

ART UNIT	PAPER NUMBER
----------	--------------

3742

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/053,840	VETRANO, CARMINE J.	
	Examiner	Art Unit	
	John A. Jeffery	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-18 and 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103(a)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1, 5-7, 9, 10, 12-15, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over IT431255 in view of Remseth et al (US1949658). IT431255 discloses a fluid heater comprising a "heater core" 5 with electric heating element 7, a fluid conduit 8a spirally surrounding an outer surface of the heater core and communicating with the "heat chamber" (numeral 9) such that injection of fluid does not contact the heating element. See Figs. 1-3. Although the fluid heated by IT431255 is water, such isolated fluid heaters commonly heat both liquids and gases (e.g., air). For example, Remseth et al (US1949658) on Page 3, lines 16-20 notes that although the invention is called an "air heating gun," it nevertheless heats liquids as well. As in IT431255, the heater of Remseth et al (US1949658) uses a tortuous flow path surrounding a heater core that ensures prolonged fluid contact with the heater core, yet ensures the fluid remains isolated not only from the heating element, but also external contaminant sources. See Fig. 1 and 2. In view of Remseth et al (US1949658), it

Art Unit: 3742

would have been obvious to one of ordinary skill in the art to heat fluid in the form of a gas (e.g., air) in lieu of liquid in the heater of IT431255 so that gaseous fluids could be heated in addition to liquids thereby broadening the versatility of the fluid heating device to diverse fluid types.

The claims also differ from IT431255 in calling for the heater core to be replaceable by being spaced from the helical coil. Providing replaceable heater cores in electric air heaters is conventional and well known in the art as evidenced by Remseth et al (US1949658) noting "heater core" 26, 27, 26a which is attached by means of screws and threaded connections to other structures as well as being spaced to enable removal. See Fig. 1. Note spacer 27a spacing the heater core from the outer sinuous conduit. In view of Remseth et al (US1949658), it would have been obvious to one of ordinary skill in the art to provide a replaceable heater core in the previously described apparatus so that the heater core could be readily removed from the housing for repair or replacement.

The claims also differ from IT431255 in calling for a cylindrical heater core with a heater coil wound around the core. But such a structure is well known in the art as evidenced by Remseth noting the spirally wound electric heater 21 around heater core 26, 27 in Fig. 1. As contrasted with cores having other shapes, a cylindrical core enables uniform spacing between the spiral heater and the core. In view of Remseth, it would have been obvious to one of ordinary skill in the art to provide a cylindrical core to ensure uniform spacing between the spiral heater and the core thus more uniformly heating gas within the core.

Art Unit: 3742

With regard to claim 5, in view of the secure, sealed connection of the conduit 29 and heat chamber 26 as best shown in Fig. 1 of Remseth et al (US1949658), no criticality is seen in the provision that such connection be welded as opposed to a removable connection of Remseth et al (US1949658).

Claims 2, 3, 8, 17, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over IT431255 in view of Remseth et al (US1949658) and further in view of Miller (US6244323). The claims differ from the previously cited prior art in calling for the temperature to be sufficient to remove an outer coating of an optical fiber.

Electrically heating and directing heated gas flow to remove fiber coatings is well known as evidenced by Miller (US6244323) noting col. 5, lines 1-40 where a stream of hot gas at 820° C is directed to an optical fiber to remove its coating. According to col. 6, lines 9-21, even lower gas temperatures (e.g., down to 550° C) are effective to remove fiber coatings. In view of Miller (US6244323), it would have been obvious to one of ordinary skill in the art to provide a heated gas temperature within the claimed range in order to heat the gas to effectively remove the coating from an optical fiber.

While the heater of the cited prior art is not used for heating optical fibers, such a limitation merely recites the intended use of the apparatus structure and does not form part of the structure *per se*. It is well settled that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the

Art Unit: 3742

claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Also, a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the apparatus claimed. See *Ex parte Masham*, 2 USPQ 2d 1647 (1987).

Here, the cited prior art heater is capable of heating a variety of workpieces-- including optical fibers. In order to remove fiber coatings, one of ordinary skill in the art would be motivated to heat the gas to the claimed temperature range in light of the teachings of Miller (US6244323).

Regarding claims 8 and 17, it is well settled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955). Here, the selection of the given dimensions of length and width are tantamount to routine optimization well within the level of one of ordinary skill in the art given a desired convective heating effect.

Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over IT431255 in view of Remseth et al (US1949658) and further in view of Fortune (US5483040). The claims differ from the previously cited prior art in calling for the time required to heat the injected air to not exceed 30 seconds. However, heating a gas with

Art Unit: 3742

an electric heater in the shortest possible time prior to convectively heating a workpiece is conventional and well known in the art as evidenced by Fortune (US5483040) noting col. 1, lines 30-38. Fortune (US5483040) states that the gas "may be heated instantly as it flows across, in heat exchange relation, [to] the heat source and is instantly applied to the work point." (emphasis added.) The express teaching of "instantly" heating the gas to operating temperature (1500° C -- col. 1, line 65) suggests an extremely short heating time. Although not expressly stated, such an "instant" time would reasonably suggest to one of ordinary skill in the art a time less than 30 seconds. In view of the desirability of instantly heating the gas to 1500° C in Fortune (US5483040), it would have been obvious to one of ordinary skill in the art to heat the gas to operating temperature in the previously described apparatus so that the operating temperature was very quickly obtained thereby improving efficiency and minimizing thermal inertia.

The claims also differ from the previously cited prior art in calling for a temperature controller. However, controlling an electric heater to maintain a predetermined temperature is known in the art as shown by Fortune (US5483040) in col. 3, lines 35-50. In view of Fortune (US5483040), it would have been obvious to one of ordinary skill in the art to provide a temperature controller in the previously described apparatus so that so that the temperature were automatically maintained thereby precluding the need to manually monitor the temperature and manually control the heater accordingly.

Art Unit: 3742

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over IT431255 in view of Remseth et al (US1949658), Miller (US6244323) and further in view of Gammelin (US5196667). The claims differ from the previously cited prior art in calling for controllably releasing the fluid (air) during relatively short periods of time. Providing a pulsed flow from a compressed gas source in an electric gas heating application is conventional and well known in the art as evidenced by Gammelin (US5196667) noting col. 2, lines 54-56 where compressed air is pulsed to ensure "a particularly precisely defined heat action." In view of the well known advantages of pulsing compressed air in a convective heating application, it would have been obvious to one of ordinary skill in the art to provide pulsed airflow in the previously described apparatus so that turbulence is created by pulsing the airflow thereby enhancing the convective heating effect.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over IT431255 in view of Remseth et al (US1949658) and further in view of SU1009405. The claim differs from the previously cited prior art in calling for quartz material. Forming both the heater core and the heat chamber of an electrically heated fluid heater of quartz is conventional and well known in the art as evidenced by SU1009405 noting the figure where the "heat chamber" 3 and the outer conduit 2 are formed of quartz so that radiant energy from electric heater 4 is not unduly absorbed by the structures due to their transparency and radiant energy thus passes unimpeded to the fluid within the structures. In view of SU1009405, it would have been obvious to one of ordinary skill in

Art Unit: 3742

the art to form the claimed structures from quartz in the previously described apparatus so that radiant energy from electric heater 4 is not unduly absorbed by the structures due to their transparency and radiant energy thus passes unimpeded to the fluid within the structures.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over IT431255 in view of Remseth et al (US1949658) and further in view of Sikka et al (US6437292). The claim differs from the previously cited prior art in calling for a 5000-hour heater life. The use of electric heaters with such life spans is conventional and well known in the art as evidenced by Sikka et al (US6437292) noting col. 6, lines 19-27 where an electric heating element is disclosed as having a 5000-20,000 hour life depending on operating power. In view of Sikka et al (US6437292), it would have been obvious to one of ordinary skill in the art to provide an element with a 5000 hour life in the previously described apparatus so that the element did not require frequent replacement thus saving maintenance costs.

Allowable Subject Matter

Claims 19 and 20 are allowable over the art of record.

Response to Arguments

Applicant's arguments filed 3/3/04 have been considered but are not deemed to be persuasive. Applicant argues that merely because the Remseth heater can be used

Art Unit: 3742

to heat either gases or liquids is not, by itself, sufficient motivation to combine the reference with IT431255 (Aldrovandi). Remarks, P. 8.

The examiner, however, respectfully disagrees. The base reference to Aldrovandi while teaching heating liquid, is certainly capable of heating gases if such fluids were directed through conduit 8. And electrically heating either a liquid or a gas flowing in a conduit is amply suggested by Remseth. Armed with Remseth's teaching, the skilled artisan would be motivated to heat continuously-flowing gases in lieu of liquids in Aldrovani's system for the reasons set forth in the rejection -- namely to increase the versatility of the fluid heating device by heating diverse fluids (i.e., liquids or gases). Moreover, since Aldrovani is capable of heating gases, the combination is proper.

Applicant also argues that Aldrovani's electric heating element 7 allegedly does not heat fluid passing in tube 9 due to the presence of "material 5." Because of this intervening material, applicant asserts that the heating element only heats fluid in outer spiral tube 8. Remarks, P. 8.

The examiner respectfully disagrees. As recognized by applicant in the second full paragraph of P. 8 of the Remarks, even if for the sake of argument material 5 is insulative, it would inherently conduct heat from the heating element to the inner tube 9 by its sheer proximity.

Furthermore, because the entire fluid flow path in Aldrovani is sealed, it is inherently isolated thus fully meeting the "isolated air transport path" limitation. Applicant's arguments regarding Remseth not disclosing such an isolated air transport

Art Unit: 3742

path are noted, but such arguments are not germane to the reason Remseth was cited.

As noted previously, Remseth was cited merely to show the well-known usage of a continuous fluid flow electric heater to heat either gas or liquids.

Finally, the scope and breadth of the term "heater core" did not preclude material

5. As noted earlier, heat is conducted from the electric heater to the "heat chamber" 9 via material 5. Thus, the "heater core" 5 contains a "heat chamber" 9 disposed within the heater core. Accordingly, Aldrovani fully meets this limitation.

Final Rejection

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

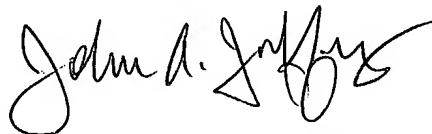
Conclusion

Art Unit: 3742

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Jeffery whose telephone number is (703) 306-4601. The examiner can normally be reached on Monday - Thursday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans, can be reached on (703) 305-5766. All faxes should be sent to the centralized fax number at (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

A handwritten signature in black ink, appearing to read "John A. Jeffery", with a stylized flourish at the end.

**JOHN A. JEFFERY
PRIMARY EXAMINER**

5/20/04